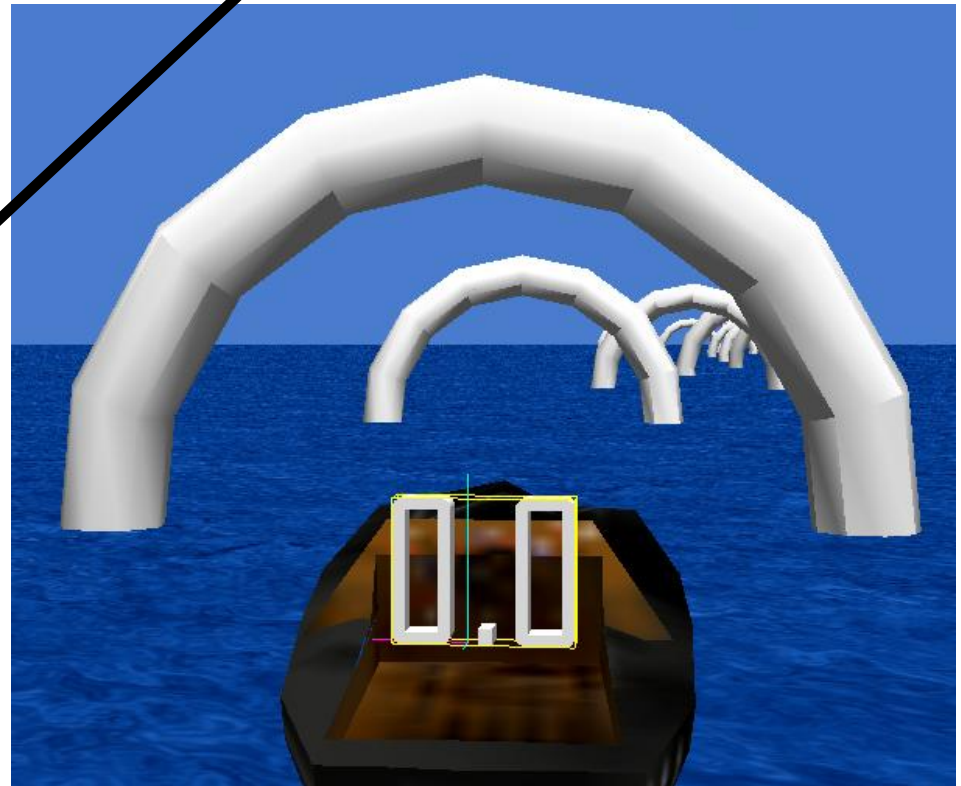
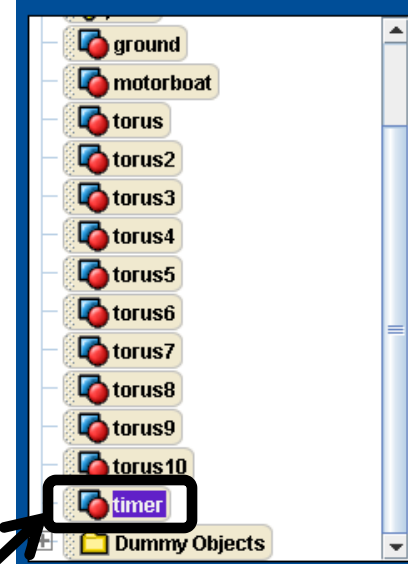


# Making a Timer

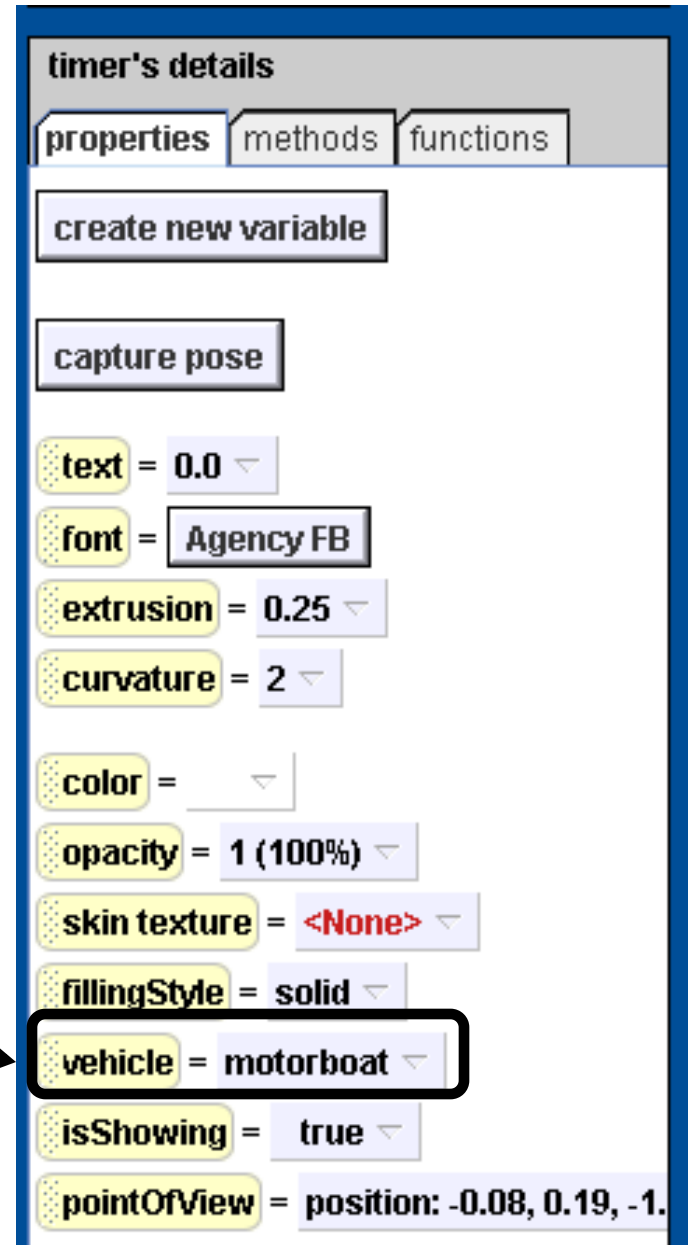
## Making a Timer

Now we'll add a timer to the world that will time the boat as it races through the arches. Add a 3D Text object from the object gallery into your world, and make it say **0.0**. Then rename it in your object tree to **timer**. Place it on top of your boat.



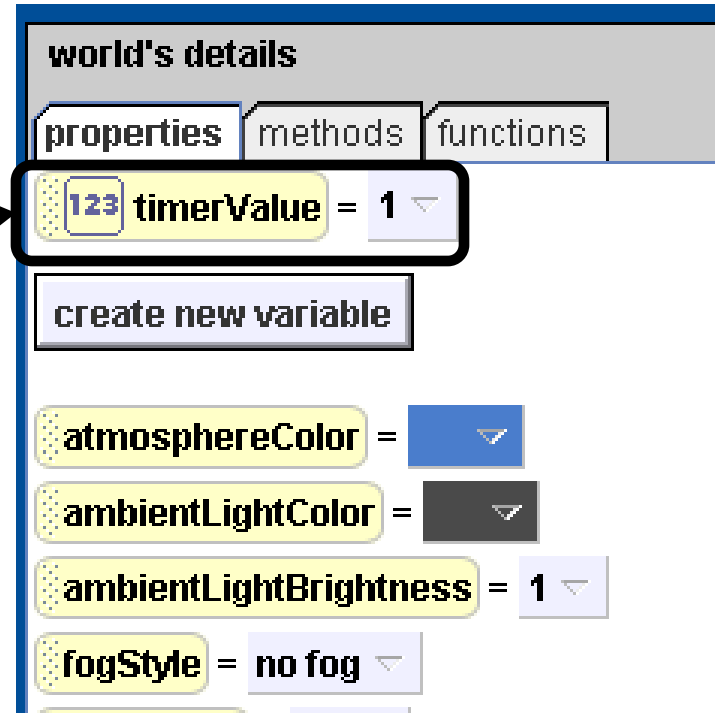
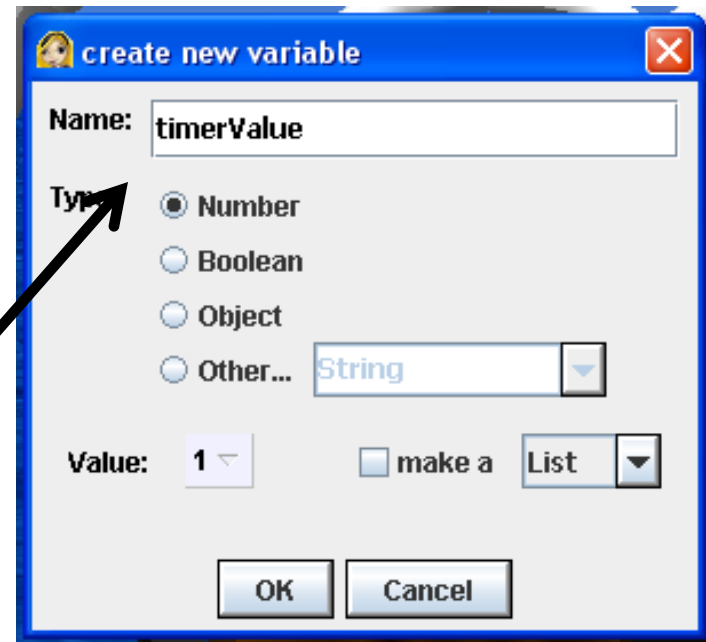
# Making a Timer

Since the boat will move through the world while it's racing, we want the timer to be able to move with it. So, go to the timer's properties tab and set it's vehicle property to motorboat.



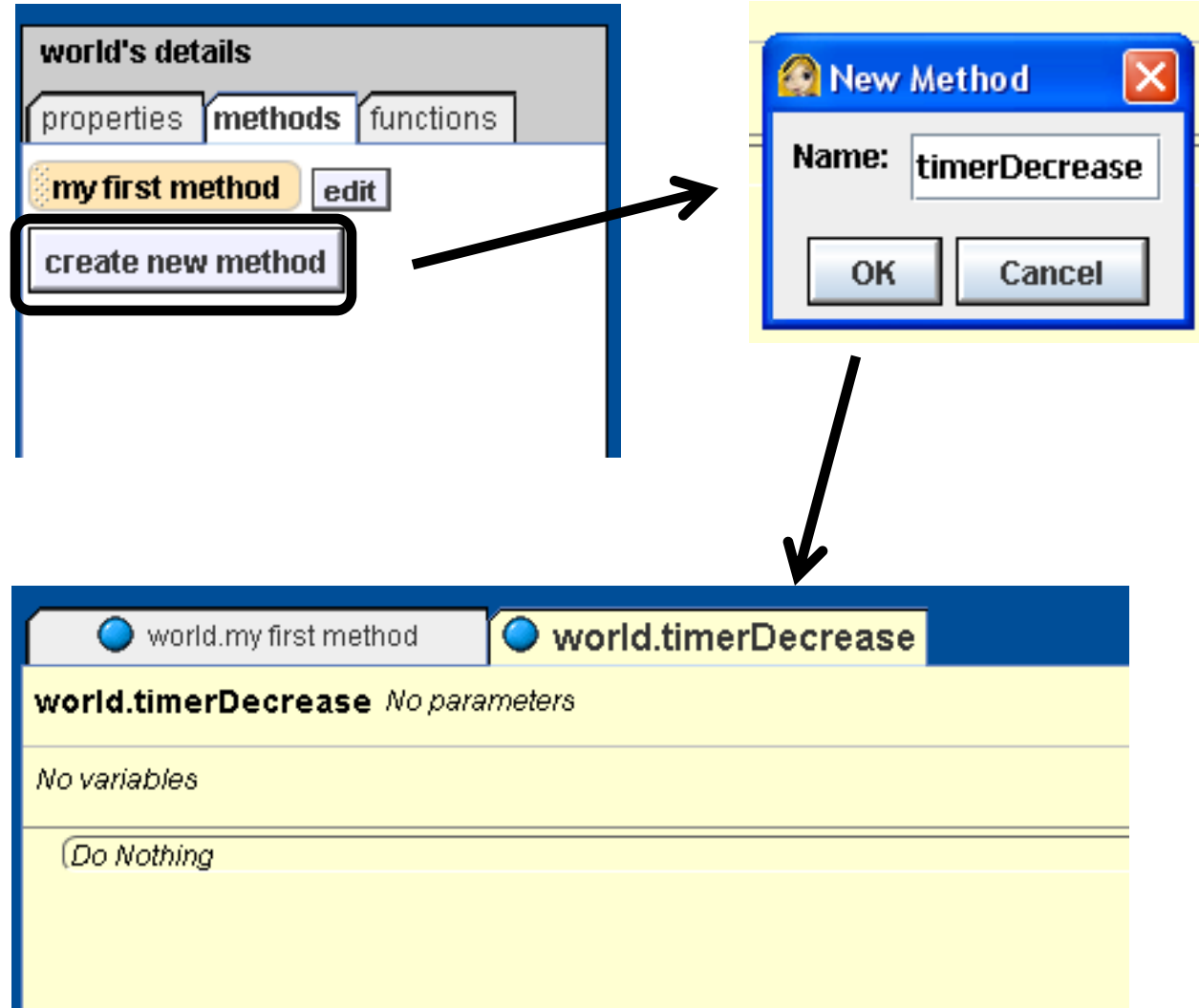
# Making a Timer

Now we need to write code to make our timer work. First, we need to create world variable to save the number value of the time that is left. Go to the world's properties tabs, and create a new variable, of the type number, and name it **timerValue**. It should be a world variable, because we will be using it in more than one place in Alice.



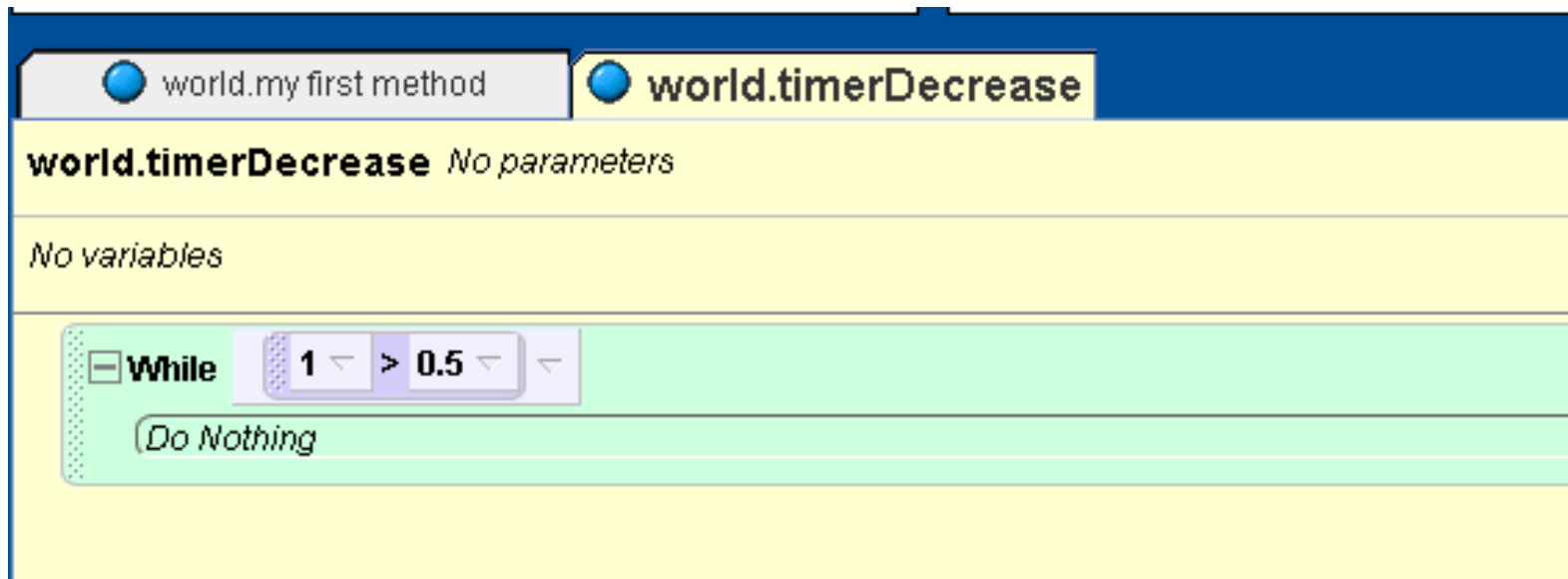
# Making a Timer

Now we need to create a method that will count down the amount of time that is left. Create a new world method called **timerDecrease**.



# Making a Timer

We want the timer to keep counting down as long as there is time left. To put this into code, get a **While** loop and drag it into the code, and select true. If **timerValue** is greater than zero, that means there's time left, so that will be the condition of the While loop. Go to the world's functions, get **a>b**, and drop it onto the **true** part of the While loop. Pick any two numbers from the drop down menu.



# Making a Timer

From the world properties pane, grab **timerValue** and drop it onto the first number at the top of the **While** loop. Then, change the second number to zero.

The image shows a software interface with two main panels. On the left, the 'world's details' pane has tabs for 'properties', 'methods', and 'functions'. The 'properties' tab is active, showing a list of variables: 'timerValue' (with a value of 4), 'create new variable', 'atmosphereColor' (set to a blue color swatch), 'ambientLightColor' (set to a dark gray color swatch), and 'ambientLightBrightness' (set to 1). On the right, the script area contains a 'world.timerDecrease' block with 'No parameters' and 'No variables'. Below it is a 'while' loop block. The 'while' block has a condition 'world.timerValue > 0' and a 'Do Nothing' block inside. Two black arrows illustrate the steps: one from the 'timerValue' property in the left pane to the first number in the 'while' loop's condition, and another from the text 'change the second number to zero' to the '0' in the same condition.

# Making a Timer

The next thing we want is for the timer to count down. To do this, we need **timerValue** to subtract one from its value. So, drag **timerValue** from the world's properties pane into the while loop. Then select **decrement world.timerValue by 1**.

The image shows a Scratch workspace with the following elements:

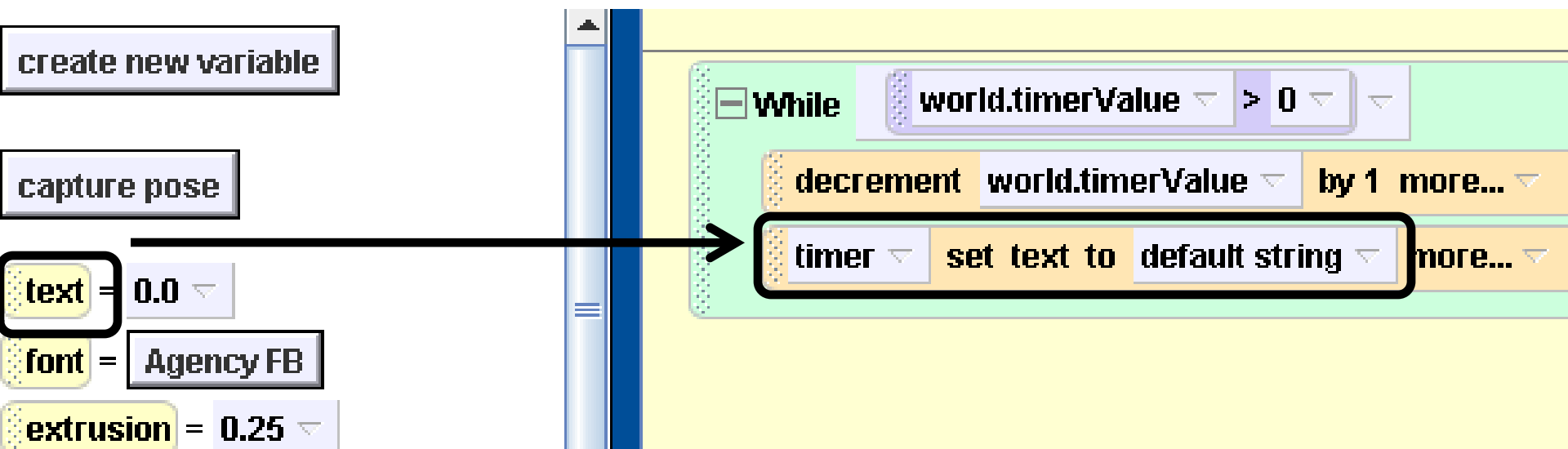
- World's details pane:** The 'properties' tab is selected. It shows a variable **timerValue** with a value of 123. Below it are two color pickers: **atmosphereColor** (blue) and **ambientLightColor** (dark grey).
- Scripts area:** A yellow block labeled **world.timerDecrease** with the note *No parameters* is at the top. Below it is a green 'While' loop block with the condition **world.timerValue > 0**. Inside the loop is a 'Do Nothing' block.
- Block palette:** A 'set value' block is visible, with two options below it: **increment world.timerValue by 1** and **decrement world.timerValue by 1**. The 'decrement' option is highlighted with a black box.

Two black arrows indicate the workflow: one from the **timerValue** variable in the properties pane to the **world.timerValue** field in the while loop condition, and another from the 'Do Nothing' block to the **decrement world.timerValue by 1** block in the palette.



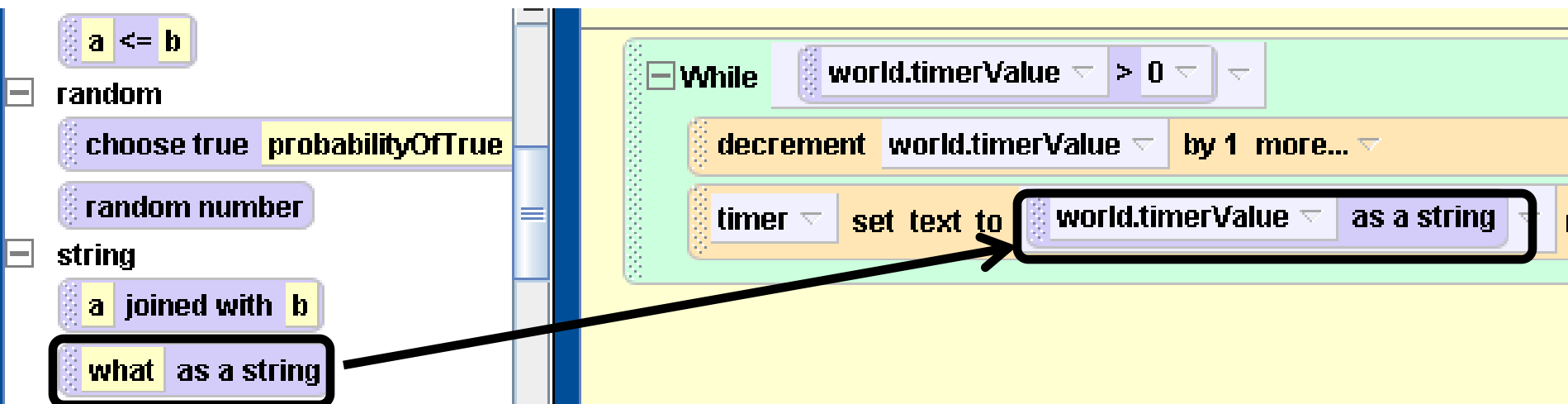
# Making a Timer

Now, we need to tie our 3D-Text to the timerValue variable, so that the 3D-Text shows how much time there is left. Click on timer in your object tree, and go to the properties tab. Click and drag **text** into your While loop and choose **default string**. Set the duration of this command to zero.



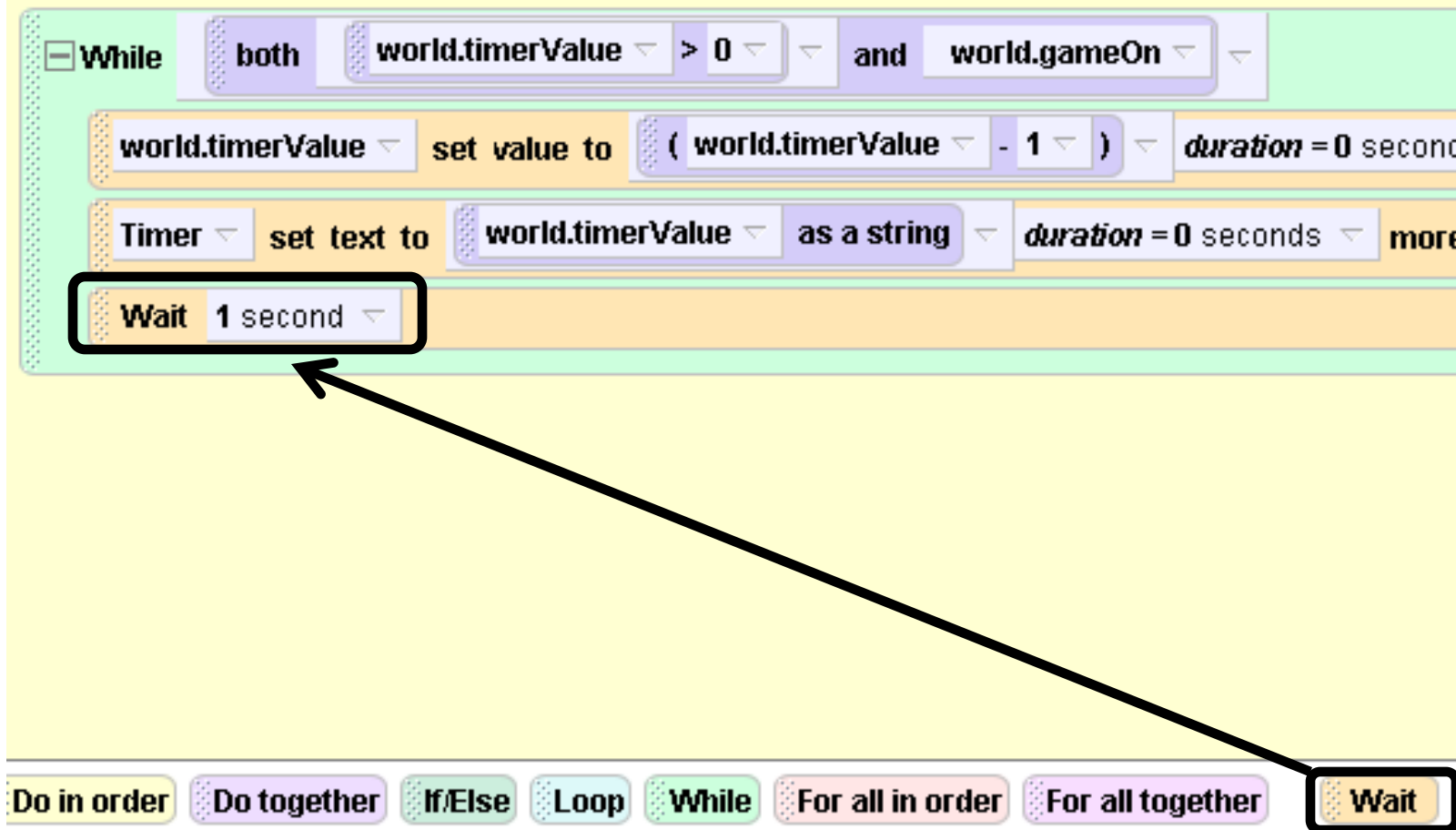
# Making a Timer

Now, click on **world** in the object tree and go to the **functions** tab. Scroll down to **what as a string**. Click and drag that onto **default string** in your code. In the drop down menu, select **timerValue**.



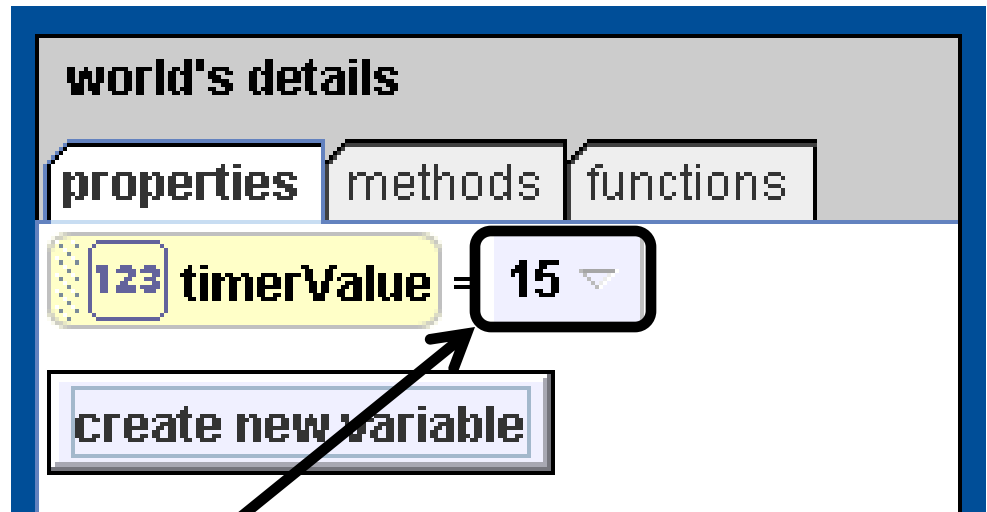
# Making a Timer

The last step to making our timer is to make sure that it takes exactly one second for the timer to count down one second. To do this, click and drag a **Wait** from the bottom of your method editor, and drop it into your **While** loop. Then select **1 second** in the drop down menu.



# Making a Timer

Now you need to figure out how much time to put on your timer, so that your game is challenging. My timer counts down 15 seconds, and if I race through the arches perfectly, I can beat the clock. First, set your timer by changing **timerValue**'s value in the world properties tab.



# Making a Timer

When you change the value of **timerValue**, you also have to change the beginning text of your timer to match that number. To do this, click on **timer** in the object tree and go to **properties**. Next to **text**, change it to the number that you have set **timerValue** to. Change your **When the world starts** event to **world.timerDecrease** and play your world to test it out. When you're done testing, change it back to **world.my first method**.

